

CLAIMS

1. A non-aqueous electrolyte secondary battery comprising: a positive electrode comprising a compound oxide containing lithium; a negative electrode comprising a carbon material; a separator interposed between said positive electrode and said negative electrode; and a non-aqueous electrolyte comprising a non-aqueous solvent and LiPF_6 dissolved therein,

wherein said negative electrode contains 0.6 to 1.7 parts by weight of a particulate modified styrene-butadiene rubber and 0.7 to 1.2 parts by weight of a thickening agent per 100 parts by weight of said carbon material where the total amount of said particulate modified styrene-butadiene rubber and said thickening agent is 1.3 to 2.4 parts by weight per 100 parts by weight of said carbon material,

and the concentration of LiPF_6 in said non-aqueous electrolyte is 0.6 to 1.05 mole/liter.

2. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein said particulate modified styrene-butadiene rubber contains a copolymer comprising an acrylonitrile unit, a styrene unit, and a butadiene unit.

3. The non-aqueous electrolyte secondary battery in accordance with claim 2, wherein said copolymer is in a form of a core-shell type particle.

4. The non-aqueous electrolyte secondary battery in accordance with claim 3, wherein, in a FT-IR absorption spectrum of said copolymer, the intensity of the absorption

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peak attributed to $C\equiv N$ stretching vibration in said acrylonitrile unit is 0.1 to 2 times the intensity of the absorption peak attributed to $C=C$ stretching vibration in said butadiene unit.

5. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein the mean particle size of said particulate modified styrene-butadiene rubber is 0.05 to $0.4\mu m$.

6. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein said thickening agent is carboxymethyl cellulose.

7. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein the concentration of $LiPF_6$ in said non-aqueous electrolyte is 0.7 to 0.9 mole/liter.

8. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein said positive electrode contains 0.4 to 2 parts by weight of a particulate modified acrylic rubber per 100 parts by weight of said compound oxide, and said particulate modified acrylic rubber contains a copolymer comprising a 2-ethylhexylacrylate unit, an acrylic acid unit, and an acrylonitrile unit.

9. The non-aqueous electrolyte secondary battery in accordance with claim 8, wherein, in a FT-IR absorption spectrum of said copolymer, the intensity of the absorption peak attributed to $C=O$ stretching vibration in said 2-ethylhexylacrylate unit and said acrylic acid unit is 3 to 50 times the intensity of the absorption peak attributed to $C\equiv N$ stretching vibration in said acrylonitrile unit.

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14. A negative electrode for a non-aqueous electrolyte secondary battery comprising: a carbon material as an active material; and a particulate modified styrene-butadiene rubber as a binder; wherein the surface area of

15. The negative electrode in accordance with claim 14, wherein said particulate modified styrene-butadiene rubber contains a copolymer comprising an acrylonitrile unit, a styrene unit, and a butadiene unit.

17. The negative electrode in accordance with claim 16, wherein, in a FT-IR absorption spectrum of said copolymer, the intensity of the absorption peak attributed to $C\equiv N$ stretching vibration in said acrylonitrile unit is 0.1 to 2 times the intensity of the absorption peak attributed to $C=C$ stretching vibration in said butadiene unit.